CLAIMS

1. Fine metal particles in the form of a dry powder, characterized in that

an average particle size of the fine metal particles is selected in the range of 1 to 100 nm,

the surface of the fine metal particles themselves is covered with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom and capable of forming a coordinative bond via a lone pair of said atom as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles,

a covering amount of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is adjusted by selecting total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in the range of 5 to 35 parts by mass based on 100 parts by mass of the fine metal particles; and

the adjustment of said covering amount is carried out by the following treatment comprising steps of:

beforehand bringing said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom into contact with the surface of the fine metal particles having an average particle size selected in the range of 1 to 100 nm, thereby once applying said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom through a coordinative bond with a metal element contained

in the fine metal particles in an amount greater than the aimed covering amount in total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom based on 100 parts by mass of the fine metal particles to form a covering layer thereof, and then preparing, as a starting material, a dispersion in which the fine metal particles having a covering layer of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom are dispersed in a dispersion solvent comprising one or more organic solvents,

removing the organic solvent contained in the dispersion as a dispersion solvent under reduced pressure, thereby concentrating the dispersion,

adding, to the dispersion subjected to the treatment for concentration, one or more polar solvents in which said one or more compounds exhibit a higher solubility at room temperature than that in the organic solvent, thereby dissolving excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in said one or more polar solvents, and then separating fine metal particles in which the adjustment of the covering amount is attained by removing the excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, as a solid phase component, from the obtained dispersion by filtration,

evaporating the remaining one or more polar solvents to dry up.

2. The fine metal particles in the form of a dry powder according to claim 1, characterized in that

the fine metal particles themselves are fine metal particles of a metal species selected from the group consisting of gold, silver, copper, platinum, palladium, tin, nickel, aluminum, zirconium, titanium, iron and tungsten, or fine alloy particles comprising two or more metals selected from the metal species group.

3. Fine metal oxide particles in the form of a dry powder, characterized in that

the fine metal oxide particles are fine particles that comprise fine metal particles as a core and a metal oxide film layer on the surface,

an average particle size of the particles having a metal oxide film layer on the surface themselves is selected in the range of 1 to 100 nm,

the surface of the fine metal oxide particles is covered with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom and capable of forming a coordinative bond via a lone pair of those atoms as a group capable of forming a coordinative bond with a metal element contained in the fine metal oxide particles,

a covering amount of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is adjusted by selecting total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or

a sulfur atom in the range of 5 to 35 parts by mass based on 100 parts by mass of the fine metal oxide particles, and

the formation of said metal oxide film layer on the surface and the adjustment of the covering amount is carried out by the following treatment comprising steps of:

beforehand bringing said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom into contact with the surface of fine metal particles having an average particle size selected in the range of 1 to 100 nm which correspond to the fine metal oxide particles, thereby once applying said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom through a coordinative bond with a metal element contained in the fine metal particles in an amount greater than the aimed covering amount in total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom based on 100 parts by mass of the fine metal particles to form a covering layer thereof, and preparing, as a starting material, a dispersion in which the fine metal particles having a covering layer of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom are dispersed in a dispersion solvent comprising one or more organic solvents,

wherein the dispersion in which the fine metal oxide particles having a covering layer formed therein, of which a metal oxide film layer on the surface is formed by surface oxidation of the fine metal particles upon preparation of the

dispersion or later in the prepared dispersion, are dispersed is employed as a starting material,

removing the organic solvent contained in the dispersion as a dispersion solvent under reduced pressure, thereby concentrating the dispersion,

adding, to the dispersion subjected to the treatment for concentration, one or more polar solvents in which said one or more compounds exhibit a higher solubility at room temperature than that in the organic solvent, thereby dissolving excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in said one or more polar solvents, and then separating fine metal oxide particles in which the adjustment of the covering amount is attained by removing the excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, as a solid phase component, from the obtained dispersion by filtration,

evaporating the remaining one or more polar solvents to dry up.

4. The fine metal oxide particles in the form of a dry powder according to claim 2, characterized in that the fine metal particles themselves which correspond to the fine metal oxide particles are fine metal particles of a metal species selected from the group consisting of gold, silver, copper, platinum, palladium, tin, nickel, aluminum, zirconium, titanium, iron

and tungsten, or fine alloy particles comprising two or more metals selected from the metal species group.

5. A process for forming a conductive wiring pattern comprising a sintered product layer of fine metal particles on a substrate, characterized in that

the sintered product layer is a layer that is obtained by bringing fine metal particles having an average particle size selected in the range of 1 to 100 nm into contact with each other and sintering the particles by heating at a temperature no higher than 350° C, and

the process comprises the steps of:

forming a fine metal particle coating layer having the wiring pattern by dry applying the fine metal particles in the form of a dry powder claimed in claim 1 or 2 to the substrate using a solid binder resin, and

softening the solid binder resin contained in the fine metal particle coating layer in said treatment for heating up and simultaneously, performing the treatment for sintering the fine metal particles contained in the fine metal particle coating layer,

wherein, upon heating up in the baking treatment, the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom covering the surface of the fine metal particle is separated from the surface of the fine metal particle and dissolved in the softened binder resin, whereby surface

contact of the fine metal particles is attained to sinter the fine metal particles with each other.

6. The process according to claim 5, characterized in that

the step of forming a fine metal particle coating layer having the wiring pattern by dry applying the fine metal particles in the form of a dry powder to the substrate using a solid binder resin is carried out

by the method of applying toner particles that are prepared by using the fine metal particles in the form of a dry powder claimed in claim 1 or 2 as core particles and said solid binder resin as a resin layer for toner by means of an electrophotographic image printing method to form a toner layer having the wiring pattern on the substrate.

7. A process for forming a conductive wiring pattern comprising a sintered product layer of fine metal particles on a substrate, characterized in that

the sintered product layer is a layer that is obtained by bringing fine metal particles having an average particle size selected in the range of 1 to 100 nm into contact with each other under a reducing atmosphere and sintering the particles by heating at a temperature no higher than 350° C, and

the process comprises the steps of:

forming a fine metal oxide particle coating layer having the wiring pattern by dry applying fine metal oxide particles

in the form of a dry powder according to claim 3 or 4 to the substrate using a solid binder resin,

allowing the fine metal oxide particles contained in the fine metal oxide particle coating layer to react with gas or vapor of a compound having reducing ability at the heating temperature under a reducing atmosphere, thereby reducing the fine metal oxide particles from their surface to the corresponding fine metal particles, and

softening the solid binder resin contained in the fine metal oxide particle coating layer in said treatment for heating up and simultaneously, performing the treatment for sintering the fine metal particles reduced in the reduction process,

wherein, upon heating in the baking process, the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom covering the fine metal oxide particle surface is separated from the fine metal oxide particle surface and dissolved in the softened binder resin, whereby surface contact of the fine metal particles is attained to sinter the fine metal particles with each other.

8. The process according to claim 7, characterized in that

the step of forming a fine metal oxide particle coating layer having the wiring pattern by dry applying fine metal oxide particles in the form of a dry powder to the substrate using a solid binder resin is carried out

by the method of applying toner particles that are prepared by using the fine metal oxide particles in the form of a dry

powder claimed in claim 3 or 4 as core particles and said solid binder resin as a resin layer for toner by means of an electrophotographic image printing method to form a toner layer having the wiring pattern on the substrate.

9. A process for preparing fine metal particles in the form of a dry powder, characterized in that

an average particle size of the fine metal particles themselves are selected in the range of 1 to 100 nm,

the surface of the fine metal particles is covered with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom and capable of forming a coordinative bond via a lone pair of those atoms as a group capable of forming a coordinative bond with a metal element contained in the fine metal particles;

a covering amount of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is adjusted by selecting the total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in the range of 5 to 35 parts by mass in based on 100 parts by mass of the fine metal particles; and

as for the step of adjustment of the covering amount, the process comprises the steps of:

beforehand bringing said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom into contact with the surface of the fine metal particles having an average particle size selected in the range of 1 to

100 nm, thereby once applying said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom through a coordinative bond with a metal element contained in the fine metal particles in an amount greater than the aimed covering amount in total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom based on 100 parts by mass of the fine metal particles to form a covering layer thereof, and preparing, as a starting material, a dispersion in which the fine metal particles having a covering layer of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom are dispersed in a dispersion solvent comprising one or more organic solvents,

removing the organic solvent contained in the dispersion as a dispersion solvent under reduced pressure, thereby concentrating the dispersion,

adding, to the dispersion subjected to the treatment for concentration, one or more polar solvents in which said one or more compounds exhibit a higher solubility at room temperature than that in the organic solvent, thereby dissolving excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in said one or more polar solvents, and then separating fine metal particles in which the adjustment of the covering amount is attained by removing the excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, as a solid

phase component, from the obtained dispersion by filtration, and

performing the treatment of evaporating the remaining one or more polar solvents to dry up.

10. The process according to claim 9, characterized in that

said fine metal particles themselves are fine metal particles of a metal species selected from the group consisting of gold, silver, copper, platinum, palladium, tin, nickel, aluminum, zirconium, titanium, iron and tungsten, or fine alloy particles comprising two or more metals selected from the metal species group.

11. A process for preparing fine metal oxide particles in the form of a dry powder, characterized in that

the fine metal oxide particles are fine particles that comprise fine metal particles as a core and a metal oxide film layer on the surface,

an average particle size of the particles having a metal oxide film layer on the surface themselves is selected in the range of 1 to 100 nm,

the surface of the fine metal oxide particles is covered with one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom and capable of forming a coordinative bond via a lone pair of those atoms as a group capable of forming a coordinative bond with a metal element contained in the fine metal oxide particles, and

a covering amount of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom is adjusted by selecting the total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in the range of 5 to 35 parts by mass based on 100 parts by mass of the fine metal oxide particles, and

as for the step of formation of the metal oxide film layer on the surface and adjustment of the covering amount, the process comprises the steps of:

beforehand bringing said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom into contact with the surface of the fine metal particles having an average particle size selected in the range of 1 to 100 nm which correspond to the fine metal oxide particles, thereby once applying said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom through a coordinative bond with a metal element contained in the fine metal particles in an amount greater than the aimed covering amount in total of said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom based on 100 parts by mass of the fine metal particles to form a covering layer thereof, and preparing, as a starting material, a dispersion in which the fine metal particles having a covering layer of said one or more compounds having a group containing

a nitrogen atom, an oxygen atom or a sulfur atom are dispersed in a dispersion solvent comprising one or more organic solvents,

wherein the dispersion in which said fine metal oxide particles having a covering layer formed thereon, of which a metal oxide film layer on the surface is formed by surface oxidation of the fine metal particles upon preparation of the dispersion or later in the prepared dispersion, are dispersed is employed as a starting material,

removing the organic solvent contained in the dispersion as a dispersion solvent under reduced pressure, thereby concentrating the dispersion,

adding, to the dispersion subjected to the treatment for concentration, one or more polar solvents in which said one or more compounds exhibit a higher solubility at room temperature than that in the organic solvent, thereby dissolving excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom in said one or more polar solvents, and then separating fine metal oxide particles, in which the adjustment of the covering amount is attained by removing the excess of one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom, as a solid phase component, from the obtained dispersion by filtration, and

performing the treatment of evaporating the remaining one or more polar solvents to dry up.

12. The process according to claim 11, characterized in that

the fine metal particles themselves which correspond to the fine metal oxide particles are fine metal particles of a metal species selected from the group consisting of gold, silver, copper, platinum, palladium, tin, nickel, aluminum, zirconium, titanium, iron and tungsten, or fine alloy particles comprising two or more metals selected from the metal species group.

13. A process for forming a conductive wiring pattern comprising a sintered product layer of fine metal particles on a substrate, characterized in that

the sintered product layer is a layer that is obtained by bringing fine metal particles having an average particle size selected in the range of 1 to 100 nm into contact with each other and sintering the particles by heating at a temperature no higher than 350° C, and

the process comprises the steps of:

forming a fine metal particle coating layer having the wiring pattern by dry applying the fine metal particles in the form of a dry powder according to claim 1 or 2 to the substrate, and

melting said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom contained in the fine metal particle coating layer and constituting the covering layer on the surface of the fine metal particle in said treatment for heating up and simultaneously, performing the treatment for sintering the fine metal particles contained in the fine metal particle coating layer,

wherein, upon heating up in the baking treatment, the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom covering the surface of the fine metal particle is separated from the surface of the fine metal particle and melted with fusing with each other, whereby surface contact of the fine metal particles is attained to sinter the fine metal particles with each other.

14. A process for forming a conductive wiring pattern comprising a sintered product layer of fine metal particles on a substrate, characterized in that

the sintered product layer is a layer that is obtained by bringing fine metal particles having an average particle size selected in the range of 1 to 100 nm into contact with each other under a reducing atmosphere and sintering the particles by heating at a temperature no higher than 350° C, and

the process comprises the steps of:

forming a fine metal oxide particle coating layer having the wiring pattern by dry applying fine metal oxide particles in the form of a dry powder according to claim 3 or 4 to the substrate,

allowing the fine metal oxide particles contained in the fine metal oxide particle coating layer to react with gas or vapor of a compound having reducing ability at the heating temperature under a reducing atmosphere, thereby reducing the

fine metal oxide particles from their surface to the corresponding fine metal particles, and

melting said one or more compounds having a group containing a nitrogen atom, an oxygen atom or a sulfur atom contained in the fine metal oxide particle coating layer and constituting the covering layer on the fine metal oxide particle surface in said treatment for heating up and simultaneously, performing the treatment for sintering the fine metal particles reduced in the reduction process,

wherein, upon heating up in the baking treatment, the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom covering the fine metal oxide particle surface is separated from the fine metal oxide particle surface and melted with fusing with each other, whereby surface contact of the fine metal particles is attained to sinter the fine metal particles with each other.

15. Fine metal particles in the form of a dry powder, characterized in that

an average particle size of the fine metal particles themselves is selected in the range of 1 to 100 nm,

the surface of the fine metal particles is covered with one or more carboxylic acids capable of forming a metal salt with metal contained in the fine metal particles,

a covering amount of said one or more carboxylic acids is adjusted by selecting the total of said one or more carboxylic

acids in the range of 5 to 35 parts by mass based on 100 parts by mass of the fine metal particles;

the adjustment of the covering amount is carried out by the following treatment comprising steps of:

beforehand bringing said one or more carboxylic acids capable of forming a metal salt with metal contained in the surface of the fine metal particle into contact with the fine metal particles having an average particle size selected in the range of 1 to 100 nm, thereby once applying said one or more carboxylic acids in the form of carboxylic acid fixed to a metal atom on the surface contained in the fine metal particles by a Coulombic interaction or in the form of a carboxylate composed of a metal cation species and a carboxylic acid anion species in an amount greater than the aimed covering amount in total of said one or more carboxylic acids constituting the covering layer based on 100 parts by mass of the fine metal particles to form a covering layer thereof, and preparing, as a starting material, a dispersion containing the fine metal particles having a carboxylic acid covering layer dispersed in a dispersion solvent comprising one or more organic solvents,

removing the organic solvent contained in the dispersion as a dispersion solvent under reduced pressure, thereby concentrating the dispersion,

adding, to the dispersion subjected to the treatment for concentration, one or more polar solvents in which said one or more carboxylic acids constituting the covering layer exhibit

a higher solubility at room temperature than that in the organic solvent, thereby dissolving excess of one or more carboxylic acids in said one or more polar solvents, and separating fine metal particles in which the adjustment of the covering amount is attained by removing the excess of one or more carboxylic acids, as a solid phase component, from the obtained dispersion by filtration, and

evaporating the remaining one or more polar solvents to dry up.

16. Fine metal oxide particles in the form of a dry powder, characterized in that

the fine metal oxide particles are fine particles that comprise fine metal particles as a core and a metal oxide film layer on the surface,

an average particle size of the particles having a metal oxide film layer on the surface themselves is selected in the range of 1 to 100 nm,

the surface of the fine metal oxide particles is covered with one or more carboxylic acids capable of forming a metal salt with metal contained in the fine metal oxide particles,

a covering amount of said one or more carboxylic acids is adjusted by selecting the total of said one or more carboxylic acids in the range of 5 to 35 parts by mass based on 100 parts by mass of the fine metal oxide particles, and

the formation of the metal oxide film layer on the surface and the adjustment of the covering amount is carried out by the following treatment comprising steps of:

beforehand bringing said one or more carboxylic acids into contact with the surface of the fine metal particles having an average particle size selected in the range of 1 to 100 nm which correspond to the fine metal oxide particles, thereby once applying said one or more carboxylic acids in the form of carboxylic acid fixed to a metal atom on the surface contained in the fine metal particles by a Coulombic interaction or in the form of a carboxylate composed of a metal cation species and a carboxylic acid anion species in an amount greater than the aimed covering amount in total of said one or more carboxylic acids constituting the covering layer based on 100 parts by mass of the fine metal particles to form a covering layer thereof, and preparing, as a starting material, a dispersion containing the fine metal particles having a carboxylic acid covering layer dispersed in a dispersion solvent comprising one or more organic solvents,

wherein the dispersion containing the fine metal oxide particles having a covering layer, on which a metal oxide film layer is formed on the surface by surface oxidation of the fine metal particles upon preparation of the starting material or later in the prepared dispersion is prepared as a starting material,

removing the organic solvent contained in the dispersion as a dispersion solvent under reduced pressure, thereby concentrating the dispersion,

adding, to the dispersion subjected to the treatment for concentration, one or more polar solvents in which said one or more carboxylic acids constituting the covering layer exhibit a higher solubility at room temperature than that in the organic solvent, thereby dissolving excess of one or more carboxylic acids in said one or more polar solvents, and then separating fine metal oxide particles in which the adjustment of the covering amount is attained by removing the excess of one or more carboxylic acids, as a solid phase component, from the obtained dispersion by filtration, and

evaporating the remaining one or more polar solvents to dry up.

17. A fine metal particle dispersion comprising fine metal particles uniformly dispersed in a dispersion solvent, characterized in that

the fine metal particles are uniformly dispersed in the dispersion solvent by re-dispersing the fine metal particles in the form of a dry powder claimed in claim 1 or 2 in the dispersion solvent,

the dispersion solvent constituting the fine metal particle dispersion after re-dispersion is a high boiling point solvent having a boiling point of 100° C or higher but 300° C or lower, and

the fine metal particle dispersion has a viscosity adjusted in the range of 50 to 200 Pa·s (25° C) by selecting the content of the dispersion solvent in the fine metal particle dispersion in the range of 3 to 25 parts by mass based on 100 parts by mass of the fine metal particles.

18. The fine metal particle dispersion according to claim 17, characterized in that the content of the dispersion solvent in the fine metal particle dispersion is selected in the range of 5 to 20 parts by mass based on 100 parts by mass of the fine metal particles.

19. A fine metal particle dispersion comprising fine metal particles uniformly dispersed in a dispersion solvent, characterized in that

the fine metal particles are uniformly dispersed in the dispersion solvent by re-dispersing the fine metal particles in the form of a dry powder claimed in claim 1 or 2 in the dispersion solvent,

the dispersion solvent constituting the fine metal particle dispersion after re-dispersion is a high boiling point solvent having a boiling point of 100° C or higher but 300° C or lower, and

a viscosity of the fine metal particle dispersion is adjusted in the range of 5 to 30 mPa·s (25° C) by selecting the content of the dispersion solvent in the fine metal particle dispersion in the range of 30 to 80 parts by mass based on 100 parts by mass of the fine metal particles.

20. The fine metal particle dispersion according to claim 19, characterized in that the content of the dispersion solvent in the fine metal particle dispersion is selected in the range of 40 to 80 parts by mass based on 100 parts by mass of the fine metal particles.

21. A fine metal oxide particle dispersion comprising fine metal oxide particles uniformly dispersed in a dispersion solvent, characterized in that

the fine metal oxide particles are uniformly dispersed in the dispersion solvent by re-dispersing the fine metal oxide particles in the form of a dry powder according to claim 3 or 4 in the dispersion solvent,

the dispersion solvent constituting the fine metal oxide particle dispersion after re-dispersion is a high boiling point solvent having a boiling point of 100° C or higher but 300° C or lower, and

the fine metal oxide particle dispersion has a viscosity adjusted in the range of 50 to 200Pa·s (25° C) by selecting the content of the dispersion solvent in the fine metal oxide particle dispersion in the range of 3 to 25 parts by mass based on 100 parts by mass of the fine metal oxide particles.

22. The fine metal oxide particle dispersion according to claim 21, characterized in that the content of the dispersion solvent in the fine metal oxide particle dispersion is selected in the range of 3 to 15 parts by mass based on 100 parts by mass of the fine metal oxide particles.

23. A fine metal oxide particle dispersion comprising fine metal oxide particles uniformly dispersed in a dispersion solvent, characterized in that

the fine metal oxide particles are uniformly dispersed in the dispersion solvent by re-dispersing the fine metal oxide particles in the form of a dry powder according to claim 3 or 4 in the dispersion solvent,

the dispersion solvent constituting the fine metal oxide particle dispersion after re-dispersion is a high boiling point solvent having a boiling point of 100° C or higher but 300° C or lower, and

a viscosity of the fine metal oxide particle dispersion is adjusted in the range of 5 to 30 mPa·s (25° C) by selecting the content of the dispersion solvent in the fine metal oxide particle dispersion in the range of 30 to 70 parts by mass based on 100 parts by mass of the fine metal oxide particles.

24. The fine metal oxide particle dispersion according to claim 23, characterized in that the content of the dispersion solvent in the fine metal oxide particle dispersion is selected in the range of 40 to 65 parts by mass based on 100 parts by mass of the fine metal oxide particles.

25. A process for forming a conductive wiring pattern comprising a sintered product layer of fine metal particles on a substrate, characterized in that

the sintered product layer is a layer that is obtained by bringing fine metal particles having an average particle

size selected in the range of 1 to 100 nm into contact with each other and sintering the particles by heating at a temperature no higher than 350° C, and

the process comprises the steps of:

forming a fine metal particle dispersion coating layer having the wiring pattern by applying, to the substrate, the fine metal particle dispersion using a high boiling point solvent as a dispersion solvent according to any one of claims 17 to 20 and

evaporating and removing the high boiling point solvent contained in the fine metal particle dispersion coating layer in said treatment for heating up and simultaneously, performing the treatment for sintering the fine metal particles contained in the fine metal particle dispersion coating layer,

wherein, upon heating up in the baking treatment, the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom covering the surface of the fine metal particle is separated from the surface of the fine metal particle, whereby surface contact of the fine metal particles is attained to sinter the fine metal particles with each other.

26. The process for forming a conductive wiring pattern according to claim 25, characterized in that

the fine metal particles themselves contained in the fine metal particle dispersion are fine metal particles of a metal species selected from the group consisting of gold, silver, copper, platinum, palladium and nickel, or fine alloy particles

comprising two or more metals selected from the metal species group.

27. A process for forming a conductive wiring pattern comprising a sintered product layer of fine metal particles on a substrate, characterized in that

the sintered product layer is a layer that is obtained by bringing fine metal particles having an average particle size selected in the range of 1 to 100 nm into contact with each other and sintering the particles by heating at a temperature no higher than 350° C, and

the process comprises the steps of:

forming a fine metal oxide particle dispersion coating layer having the wiring pattern by applying, to the substrate, the fine metal oxide particle dispersion using a high boiling point solvent as a dispersion solvent according to any one of claims 21 to 24, and

allowing the fine metal oxide particles contained in the fine metal oxide particle coating layer to react with gas or vapor of a compound having reducing ability at the heating temperature under a reducing atmosphere, thereby reducing the fine metal oxide particles from their surface to the corresponding fine metal particles,

evaporating the high boiling point solvent contained in the fine metal oxide particle dispersion coating layer in said treatment for heating up and simultaneously, performing the

treatment for sintering the fine metal particles reduced in the reduction process,

wherein, upon heating up in the baking treatment, the compound having a group containing a nitrogen atom, an oxygen atom or a sulfur atom covering the fine metal oxide particle surface is separated from the fine metal oxide particle surface and evaporated with the high boiling point solvent, whereby surface contact of fine metal particles is attained to sinter the fine metal particles with each other.

28. The process for forming a conductive wiring pattern according to claim 27, characterized in that

the fine metal particles themselves which correspond to the fine metal oxide particles contained in the fine metal particle dispersion are fine metal particles of a metal species selected from the group consisting of silver, copper and nickel, or fine alloy particles comprising two or more metals selected from the metal species group.